PRINCIPLES OF TRANSDUCER DEVICES AND COMPONENTS

Edited by

Sheroz Khan, International Islamic University Malaysia

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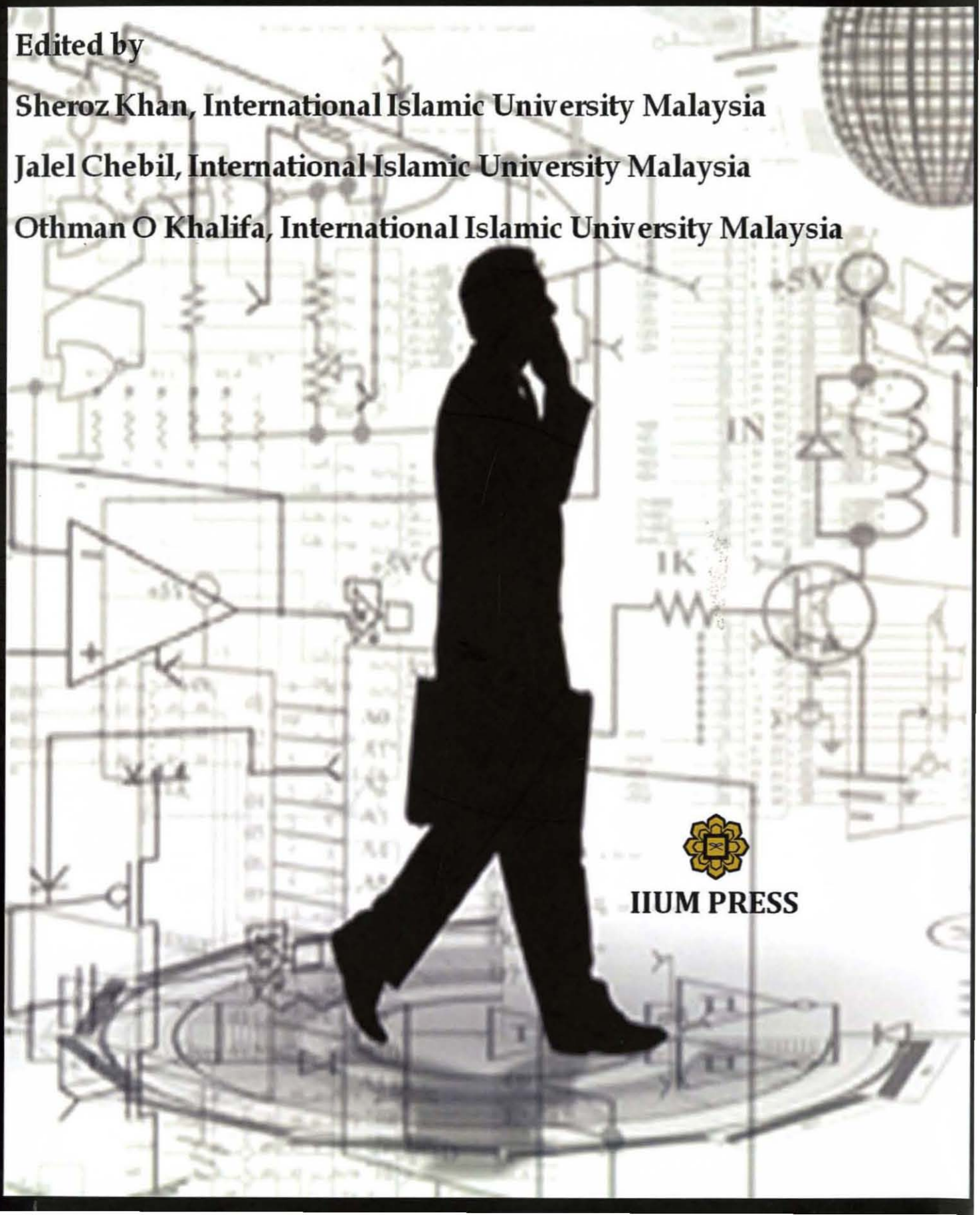

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CONTENTS

Chapter 26

ANALYSIS OF HYBRID STEPPER MOTOR PERFORMANCE UNDER THE INFLUENCE OF VOLTAGE SUPPLY INTERFERENCE

ABDULAZEEZ F. SALAMI, WAHAB A. LAWAL, SHEROZ KHAN, TEDDY SURYA GUNAWAN, SIGIT PUSPITOWIGATI JAROT

26.0 INTRODUCTION

This chapter investigates the effects of voltage supply interference on the performance of hybrid stepper motor. MATLAB Simulink is used to model the power supply, sinusoidal interfering signal, stepper motor driver circuit and the hybrid stepper motor. This stepper motor is using a DC Voltage supply of 28 volts and it is a two-phase motor with a step angle of 1.8°. The different simulation scenarios that is explored in this work are for a noiseless power

supply, low frequency-low amplitude noise operating at 50 hertz and 1 volts, low frequency-high amplitude noise operating at 50 hertz and 5 volts, high frequency-low amplitude noise operating at 200 hertz and 1 volts and high frequency-high amplitude noise operating at 200 hertz and 5 volts.

The MATLAB/Simulink model for the system experimented, the stepping pulses and the resulting rotor position waveform is shown in Figure 26.1

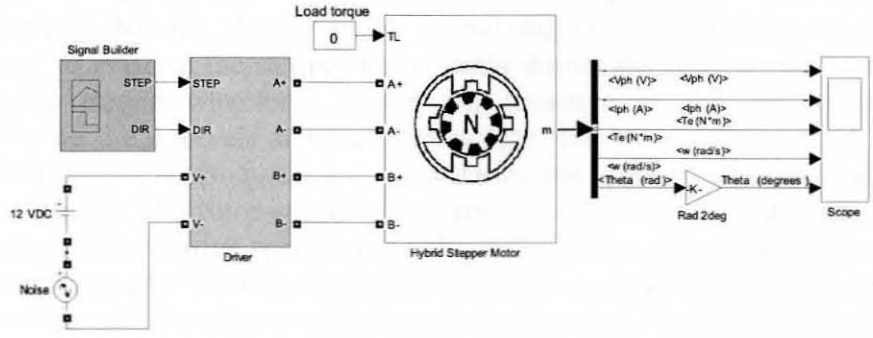

Fig. 26.1: MATLAB/Simulink Model For The System Experimented